

**REMARKS**

Applicants appreciate the indication that claim 27 is allowed.

Applicants believe that the "material system" claims are rejected under the interpretation that these claims read on a mixture of ingredients. Applicants had intended the claims to read on a set of materials useful for three dimensional printing (comprising at least two components: solvent and binder particles, and optionally filler particles, and containing in these components two complementary polyelectrolytes and/or a photoinitiator).

Applicants respectfully submit that the §112 and art rejections are overcome by the clarification of the independent claims.

Accordingly, review and reconsideration of the Office Action of August 9, 2004 is respectfully requested.

**Office Action**

Turning now to the Office Action in greater detail, the paragraphing of the Examiner is adopted.

**Present Invention**

The invention concerns a material system for 3-D printing, wherein the produced shape (3-D printing product) has higher form-stability (as a result of acid-base reaction of polyelectrolytes, and/or polymerization of binder triggered by initiator).

The invention also concerns a process for producing a three dimensional shape, using the material system.

**Claim Rejection 35 U.S.C. §112**

The Examiner rejects claims 20 and 21 under 35 U.S.C. §112, second paragraph, as being indefinite.

The Examiner does not understand how the particles could be rounded off or have sizes if the particles are **dissolved in the binder**.

Applicants appreciate the Examiner pointing out that claim 14 could be interpreted as claiming on a mixture of the listed ingredients. This was not intended.

Applicants note that in allowable process claim 27 **"dry"** particles of binder and optionally filler are first coated in a layer. Then a solvent is printed onto the layer of particles of binder and filler to activate the binder. This system works.

Claim 14 claims a material system. It is not clear from the claim whether the ingredients are separate (as Applicants intend) or mixed (the Examiner's interpretation of claim 14).

If the ingredients are already mixed, then binder particles may be dissolved in solvent, the binder can not be defined on the basis of particle sizes, and (assuming no insoluble filler particles) the material system in fact becomes liquid, no longer has shape stability, and is not useful for 3D printing.

The Examiner reads claim 14 as reading on a mixture wherein the binder is already dissolved in the solvent, in which case the product might be an "ink" as used in the prior art.

Applicants however intended that claim 14 be directed to a collection of unmixed materials constituting a "3D printing kit".

Accordingly, Applicants amend claims 14, 22 and 26 to define the binder and filler materials as being particles, and to define the material system as comprising at least two components. Applicants respectfully submit that this clarification of the claims overcomes the rejections of claims 20 and 21 under this paragraph.

**Claim Rejection 35 U.S.C. §102**

The Examiner rejects claims 14-23 and 26 under 35 U.S.C. 102(b) as being anticipated by Lent et al. or Salvin et al. or Fanger et al.

Applicants respectfully traverse.

The present invention concerns a material system for three dimensional printing, which is operable only when at least binder particles and solvent be provided as two separate components. In practice, the "dry" particles of binder and optionally filler are first coated in a layer. Then the solvent is printed onto the layer of particles of binder and optionally filler to activate the binder. This system can not work as a one component mixture. Accordingly, the claims have been clarified to claim a two component material system.

Lent et al teaches a UV curable, etch-resistant ink composition. There is no teaching of a two component system comprising solvent and binder particles.

Salvin et al teaches a photosensitive composition containing water, a water soluble or dispersible solid, and cross-linkable film forming polymers as binder. This is not a two-component system, it does not comprise binder particles, and it is not suitable for three dimensional printing.

Fangler et al is similar to Salvin. Fangler et al does not disclose a material system for use in 3D printing.

Accordingly, the Examiner apparently having applied these references against the present material system claims construed as claiming a solvent/binder mixture, which mixture may be comparable to an ink, and these claims having been amended to more clearly define the invention as comprising at least two components, it is respectfully submitted that the rejection is overcome.

Applicants respectfully submit that the present claims, as clarified to comprise a two or more components, claim the material system as a "kit" with solvent and binder provided separately.

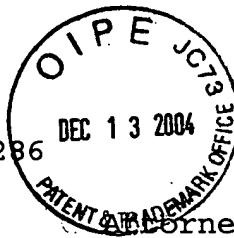
Withdrawal of the rejection is respectfully requested.

**Claim Rejection 35 U.S.C. §103**

The Examiner rejects claim 25 under 35 U.S.C. 103(b) as being unpatentable over Fanger et al.

Applicants respectfully submit that dependent claim 25 is allowable by virtue of being dependent from an allowable claim.

U.S. Application No. 09/870,286  
AMENDMENT C



Attorney Docket: 3926.029

**Allowable Subject Matter**

Applicants appreciate the indication that claim 27 is allowed.

The application being in condition for allowance, early issuance of the Notice of Allowance is respectfully requested.

Respectfully submitted,

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Date: **December 9, 2004**

**CERTIFICATION OF MAILING AND AUTHORIZATION TO CHARGE**

I hereby certify that a copy of the foregoing AMENDMENT C for U.S. Application No.: 09/870,286 filed May 30, 2001, was deposited in first class U.S. mail, with sufficient postage, addressed: ATTN: Mail Stop: **Amendment**, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on **December 9, 2004**.

The Commissioner is hereby authorized to charge any additional fees, which may be required at any time during the prosecution of this application without specific authorization, or credit any overpayment, to Deposit Account No. 16-0877.

Stephan A. Pendorf